Ohio Administrative Code

Rule 3701-28-17 Procedures for the sealing and decommissioning of private water systems.

Effective: January 1, 2020

(A) All private water systems that are not providing the source of water for human consumption, as defined in paragraph (CCC) of rule 3701-28-01 of the Administrative Code, shall either be sealed or decommissioned in accordance with this rule or maintained in strict compliance with all applicable requirements of this chapter.

(B) Upon completion of testing, a test hole shall either be permanently sealed or converted into a well with the minimum installation of well casing, grout, and cap, and the construction shall comply with all applicable requirements of this chapter.

(C) All dry holes that are not being used as a private water system shall be sealed in accordance with the provisions of this rule within ten days or may be converted to a geothermal system and meet the requirements of paragraph (B) of this rule.

(1) All uncased boreholes to be converted for geothermal use shall be protected with primary casing immediately upon determination that the borehole is a dry hole in order to prevent surface water infiltration.

(2) All dry holes or test holes to be converted for geothermal use shall be completed as a geothermal well within the remaining time period of the permit.

(D) When a replacement private water system, or a public water system is installed, or a connection is made to a public water system, any private water system that is not providing the primary source of water shall be sealed or decommissioned pursuant to the provisions of this rule within thirty days, unless the following conditions can be met:

(1) The private water system owner demonstrates to the satisfaction of the board of health that the private water system(s) will not cause or contribute to contamination of the ground water supply, present a safety hazard, or present a public health nuisance;

(2) Except for conditions cited in this rule, the private water system is, and will be maintained in compliance with this chapter;

(3) Demonstration of compliance for a well must include an ability to be tested, a water sample, the presence of an operational pumping system and one or more of the following:

(a) A well log;

(b) A downhole camera video survey;

(c) A dye test; or

(d) An assessment performed by a registered private water systems contractor or the board of health that the system meets the requirements of this chapter.

(4) A rainwater cistern or hauled water storage tank being kept to retain water as a nonpotable water source must:

(a) Include an operational pumping system;

(b) Provide no physical cross connection to another water system in accordance with paragraphs (F) and (G) of rule 3701-28-08 of the Administrative Code; and

(c) A rainwater cistern or hauled water storage tank being kept to retain water as a non potable water source that meets the requirements of this paragraph is exempt from the requirements of rule 3701-28-15 of the Administrative Code for continuous disinfection and cyst filtration.

(5) Plastic tanks shall not be re-purposed as a room. A concrete rainwater cistern or hauled water storage tank to be retained as a complete structure shall be:

(a) Emptied of all accumulated water;

(b) Disconnected from all water collection systems;

(c) Disconnected from the distribution systems for the pressure tank, all water treatment, and plumbing and provide no physical cross connection in accordance with paragraphs (F) and (G) of rule 3701-28-08 of the Administrative Code; and

(d) Compliant with local building codes as follows:

(i) Be determined to be acceptable as a structure under local building codes; or

(ii) For a concrete rainwater cistern or hauled water storage tank beneath the foundation of a dwelling or building, be determined by local building codes sealing the rainwater cistern or hauled water storage tank in compliance with this rule could compromise the integrity of the foundation.

(6) All rainwater cisterns and hauled water storage tanks that are permanently out of service and not being kept by the property owner shall be:

(a) Disconnected from the distribution systems, the pressure tank, all water treatment, and plumbing and provide no physical cross connection in accordance with paragraphs (F) and (G) of rule 3701-28-08 of the Administrative Code;

(b) Disconnected from all water collection systems;

(c) Emptied of all accumulated water;

(d) Rendered non-watertight by removing at least one wall of the cistern or hauled water storage tank, all or in part, to prevent the accumulation of water;

(e) Removed when possible, if a plastic tank; and

(f) Completely filled with an inert solid material to prevent collapse.

(7) Springs and ponds no longer providing the source of water for a private water system shall be

decommissioned by disconnecting distribution systems from the pressure tank, all water treatment, and plumbing and provide no physical cross connection in accordance with paragraphs (F) and (G) of rule 3701-28-08 of the Administrative Code.

(a) Springs and ponds retained by the property owner as a non-primary potable water source are exempt from the water treatment disinfection and filtration requirements of rule 3701-28-15 of the Administrative Code;

(b) Ponds retained by the property owner as a non-primary potable water source are exempt from the requirements of rule 3701-28-14 of the Administrative Code; and

(c) Springs retained by the property owner as a non-primary potable water source are exempt from the requirements of 3701-28-13 of the Administrative Code.

(E) Except when a private water system well is sealed, a completion form for decommissioning or retaining a private water system no longer providing water for human consumption as defined in paragraph (CCC) of rule 3701-28-01 of the Administrative Code shall be filed with the board of health.

(F) When the private water system is no longer a source of water for human consumption as defined in paragraph (CCC) of rule 3701-28-01 of the Administrative Code due to the connection to a public water supply, installation of a backflow prevention device containing a dual check valve assembly meeting the requirements of American society of sanitary engineering (ASSE) standards 1013 or 1015 is required.

(G) Except as provided in paragraph (I) of this rule, the owner of property on which a permanently out of service well or other private water system is located shall be responsible for the sealing of the well or decommissioning of the other private water system, unless a written contract between the property owner and a registered contractor provides otherwise.

(H) If the department determines that a registered contractor has improperly located or constructed a private water system, the water system contractor shall be responsible for sealing the well or decommissioning the other private water system or bringing the private water system into

compliance.

(I) Information regarding the construction characteristics of the well or dry hole shall be obtained by the registered contractor intending to perform the work prior to the sealing of the well or dry hole. This information may be obtained from one or more of the following:

(1) The well log and drilling report filed in accordance with section 1521.05 of the Revised Code; or

(2) Surveys of the well or dry hole completed by using a borehole video camera, casing depth indicator, or caliper log.

(J) Sealing materials approved for use in rule 3701-28-09 of the Administrative Code shall be used to seal private water systems, test wells and dry holes.

(K) Except for shallow sand point wells where the entire casing is removed, all wells to be sealed, dry holes, or test wells shall be sealed in accordance with the following requirements, as applicable:

(1) To the extent possible, all obstructions should be removed from the well including pumps and related equipment, drop pipes, pitless adapters, suction lines, trash or other debris. Pumps that cannot be removed shall be pushed to the bottom of the well if possible, or left in place if it is not possible to push it to the bottom of the well.

(2) Well casing may be left in place, or may be removed, ripped or perforated to allow for sealing of the annular space. Unless permanently attached, all liner pipe should be removed from the well prior to placement of sealing materials. If the well casing or liner pipe is left in place, the private water systems contractor must ensure that grout materials are able to penetrate all annular spaces.

(3) If there is water flowing from around the outside of the well casing or there is gravel packing connecting two or more hydraulic zones the well shall be over drilled.

(4) Sealing materials authorized in rule 3701-28-09 of the Administrative Code shall be placed in the well in accordance with the following requirements:

(a) During the placement of grout slurry by pressure grouting methods, grout shall be placed from the bottom of the well or dry hole upwards in one continuous operation until cement or bentonite based grout of approximately the same density as the grout being pumped is coming out of the top of the well or dry hole.

(b) Cement and concrete grout slurries may be gravity poured into a dry hole where no water is present in the well or borehole.

(c) Where the borehole conditions, including depths at which water was encountered during the drilling process, and geologic formations are known via a well log or a down hole camera video recording, clean sand, gravel, or fire clay may be placed adjacent to screened or aquifer zone(s) greater than ten feet below the bottom of the casing and no closer than twenty-five feet below ground surface. If the depth to the aquifer is unknown, then the entire well or borehole shall be filled with concrete, coarse grade or pelletized bentonite. Well sealing must ensure that no mixing of water between aquifers will occur.

(d) When dry pouring using course grade or pelletized bentonite the following requirements shall be met:

(i) Coarse grade or pelletized bentonite shall be poured slowly into the top of the well or dry hole to prevent bridging in the casing or borehole, in accordance with the following procedures:

(a) Coarse grade or pelletized bentonite shall be poured over a wire mesh screen to keep the fine bentonite powder from entering the well or dry hole.

(b) Screened coarse grade or pelletized bentonite shall be poured at a continuous rate no faster than the manufacturer's recommendation or two minutes per fifty pounds.

(c) The pouring process shall be halted intermittently to lower a weighted measuring tape into the well to determine the top of the sealing products and confirm that bridging has not occurred. A tamping device shall be used where possible to break any bridges that may form.

(d) Where the borehole or well is dry, the bentonite must be periodically hydrated with water in

accordance with the manufacturer's requirements.

(ii) Fine bentonite particles that accumulate in the shipping container shall not be used.

(5) After the grout slurry sealing material has been placed into the well, dry hole or test hole the sealing material shall assessed a minimum of twelve hours after placement to determine whether any settling has occurred. If settling has occurred, then additional grout shall be placed into the remaining void space.

(6) The total volume of sealing materials used to seal a well shall be not less than eighty per cent of the total volume of the space to be filled.

(7) Any remaining casing shall be cut off to a minimum depth of two feet below grade where possible. If a casing is terminated in a cement floor or structure, the casing may be cut off level to the grade of the cement floor or structure and finished with a level concrete pour.

(8) Well pits shall be removed by collapsing at least one wall, breaking up the floor, and removing or disconnecting all drains, and backfilling the remaining void space with native clay soils and graded to ensure water drains away.

(9) The remaining hole shall be filled with clean soil and graded to ensure that water drains away from the sealed well or dry hole.

(10) A well sealing report as required under section 1521.05 of the Revised Code shall be filed with the board of health, the department of natural resources division of geological survey, a copy provided to the well owner, and a copy retained by the registered contractor.

(L) Shallow sand point wells where the entire casing is removed, and the resulting formation collapse will restore the aquifer to its natural state shall be sealed in accordance with the following requirements:

(1) The entire length of casing shall be removed,

(2) A minimum of a one-foot radius around the location of the well casing shall be excavated to a minimum depth of two feet below grade and a one foot thick layer of coarse grade or pelletized bentonite or concrete grout shall be added. The bentonite shall be hydrated with five gallons of water per fifty pounds of bentonite if the excavation is dry.

(3) The remainder of the excavation shall be filled with clean clay or native soils as appropriate for the site and graded to ensure drainage away from the area.

(4) A well sealing report as required under section 1521.05 of the Revised Code shall be filed with the board of health, the department of natural resources division of geological survey, a copy provided to the well owner, and a copy retained by the registered contractor.

(M) In addition to the requirements of paragraphs (B) to (K) of this rule, wells drilled through multiple unconsolidated and consolidated aquifers that are not flowing at the surface shall be sealed in accordance with one of the following requirements, as applicable:

(1) The well shall be pressure grouted using concrete grout in accordance with paragraph (F) of rule 3701-28-09 of the Administrative Code or bentonite grout in accordance with paragraph (G) of rule 3701-28-09 of the Administrative Code.

(2) If the well is less than two hundred feet deep and greater than or equal to four inches in diameter or if the well is less than one hundred feet in depth and less than four inches in diameter, coarse grade bentonite may be poured into the well in accordance with paragraph (H) of rule 3701-28-09 of the Administrative Code.

(3) If detailed construction and geologic data is available, then clean sand, gravel, or fire clay may be placed adjacent to the aquifer zones with grout placed adjacent to the confining units. The well shall then be sealed from the top of the uppermost aquifer to the surface with cement grout in accordance with paragraph (F) of rule 3701-28-09 of the Administrative Code or bentonite grout in accordance with paragraph (G) of rule 3701-28-09 of the Administrative Code.

(N) For purposes of this rule "dug or bucket drilled well or dry hole" means a well consisting of a large diameter hole, deeper than it is wide, constructed into the ground, usually by hand, but if by

mechanical means, by methods other than drilling, jetting, auguring or boring, and within which the side walls are supported by stone, brick, tiles or other similar materials. In addition to the requirements of paragraphs (B) to (K) of this rule, dug wells shall be sealed in the following manner.

(1) All loose debris, drop pipes, pumps or other foreign materials shall be removed from the well as practical.

(2) Notwithstanding paragraph (K)(2) of this rule, the top three feet of casing, wall or liner material shall be removed and the area shall be excavated six inches beyond the original borehole;

(a) The entire depth of the dug well shall be filled with concrete, concrete mixes with aggregate sizes greater than medium sand up to 3/4 inch gravel may be used for the purposes of sealing a dug well; or,

(b) the dug well shall be sealed in the following manner:

(i) The well or hole shall be filled with gravel adjacent to the producing zone in the well. The remainder of the well shall be filled with concrete, coarse grade or pelletized bentonite, fire clay, clay, or cuttings to within fifteen feet of the natural ground surface.

(ii) A one foot thick layer of concrete, coarse grade or pelletized bentonite shall be placed from fourteen to fifteen feet below the natural ground surface.

(iii) A one foot thick layer of coarse grade or pelletized bentonite or concrete grout shall be added at the level at which the casing, wall, or liner material was removed and shall extend beyond the outside diameter of the well. The bentonite shall be hydrated with five gallons of water per fifty pounds of bentonite if the well is dry.

(iv) The remainder of the borehole shall be filled with clean clay or native soils as appropriate for the site and graded to ensure drainage away from the well.

(O) In addition to the requirements of paragraphs (B) to (K) of this rule, wells constructed using a bucket auger shall be sealed in the following manner:

(1) The well shall be sealed in accordance with paragraphs (B) to (K) of this rule to within fifteen feet of the natural ground surface.

(2) All well casing, liner pipe and gravel pack shall be removed to a depth of fifteen feet from the natural ground surface.

(3) The remaining borehole shall be filled with concrete, coarse grade or pelletized bentonite or a two foot layer of concrete, coarse grade or pelletized bentonite may be placed from thirteen to fifteen feet from the natural ground surface and the remainder of the borehole filled with clean clay or native fill material as appropriate for the site.

(4) The surface shall be graded to ensure drainage away from the well.

(P) In addition to the requirements of paragraphs (B) to (K) of this rule, wells that are flowing shall be sealed in accordance with the following requirements, as applicable:

(1) If possible, the casing shall be extended until the flow of water over the top of the casing stops.

(a) The well shall be pressure grouted using concrete or cement grout in accordance with paragraph (F) of rule 3701-28-09 of the Administrative Code; or

(b) When the flow can be controlled by extending the casing and if the well is less than two hundred feet deep, a sufficient weight of coarse grade or pelletized bentonite to permanently inhibit the natural flow may be poured into the well in accordance with paragraph (H) of rule 3701-28-09 of the Administrative Code.

(c) If the casing was extended and is intended to be cut off at the surface when the well has been sealed, then the concrete or cement shall be allowed to setup, or the coarse grade or pelletized bentonite allowed to fully hydrate prior to cutting off the casing extension.

(d) Bentonite slurries shall not be used for sealing flowing wells.

(2) If the hydrostatic head is too high to permit casing extension, one of the following requirements shall be met:

(a) An inflatable packer shall be installed at the top of the producing formation to stop or restrict the flow of water. The well shall then be pressure grouted using cement or concrete grout in accordance with paragraph (F) of rule 3701-28-09 of the Administrative Code through the packer from the bottom of the hole to the bottom of the packer. The packer shall then be deflated and pressure grouting shall continue to the surface;

(b) A shut-in device shall be installed at the top of the well to prevent flow. A conductor pipe shall be inserted through the shut-in device and the well shall be pressure grouted using cement grout in accordance with paragraph (F) of rule 3701-28-09 of the Administrative Code from the bottom of the well to the ground surface;

(c) Clean, washed gravel may be poured into the well to reduce the flow of water to a point where an adequate weight of concrete or cement can still be placed to control the flow. The well shall then be pressure grouted using cement grout in accordance with paragraph (F) of rule 3701-28-09 of the Administrative Code from the top of the gravel to the ground surface; or

(d) Cement grout slurries shall be used. Additives to increase the density of the cement may be used to control the flow of water. Cement grout shall be placed in accordance with paragraph (F) of rule 3701-28-09 of the Administrative Code and appropriate placement techniques shall be used to ensure that separation of the cement does not occur during the grouting process.

(Q) In addition to the requirements of paragraphs (B) to (K) of this rule, wells drilled through fractured or cavernous formations where the size of the fracture or cavern is greater than one foot in thickness, or mine shafts shall be sealed in compliance with the following requirements:

(1) The depth and thickness of the fractured, cavernous zone or mine shaft shall be determined, if possible:

(a) Where the fractured, cavernous zone or mine shaft is greater than twenty-five feet from the ground surface, the borehole or well below the fractured zone shall be sealed in accordance with this

rule and a plug consisting of a packer, shale basket, or other similar device shall be installed above the fractured or cavernous formation, with grout materials placed above the plug to the ground surface, or the intersection of the borehole or well and the fractured or cavernous zone shall either be filled with clean disinfected gravel, or left open, and the remainder of the borehole sealed to the ground surface.

(b) Where the fractured, cavernous zone or mine shaft is less than or equal to twenty-five feet from the ground surface, then the borehole or well shall be filled with cement grout with additives that promote bridging across the fractured, cavernous zone or mine shaft.

(2) The remainder of the well or borehole shall then be grouted in accordance with this chapter.